

Energy Efficiency in Buildings (Measurements)



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1

Background

2

Key Considerations

3

Performance Indicators

4

Measure & Monitor

Background

**P
R
O
B
L
E
M
S**

High Dependence on
Imported Fossil Fuels

Increasing Energy
Consumption

Increasing Cost of
Imported Fossil Fuels

Negative Effects of
Climate Change

Increase Renewable
Energy Implementation

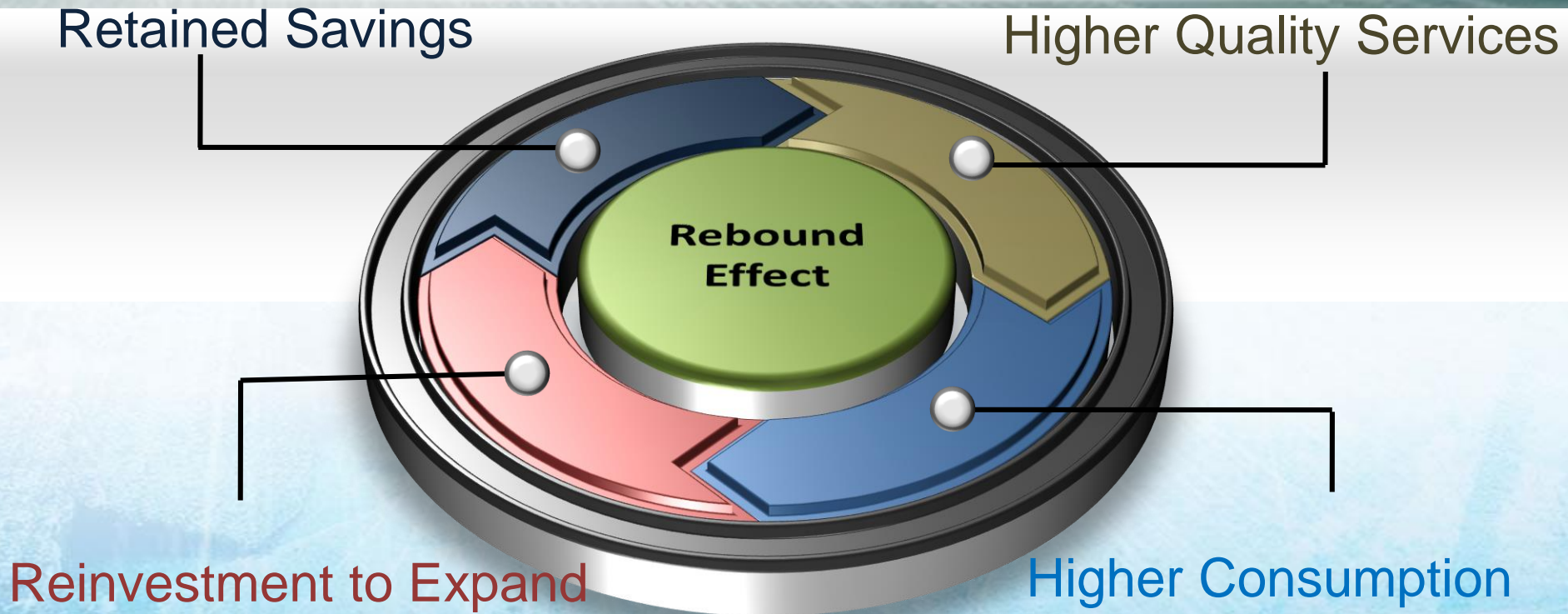
Promote Energy
Conservation

Increase Energy Efficiency
Implementation

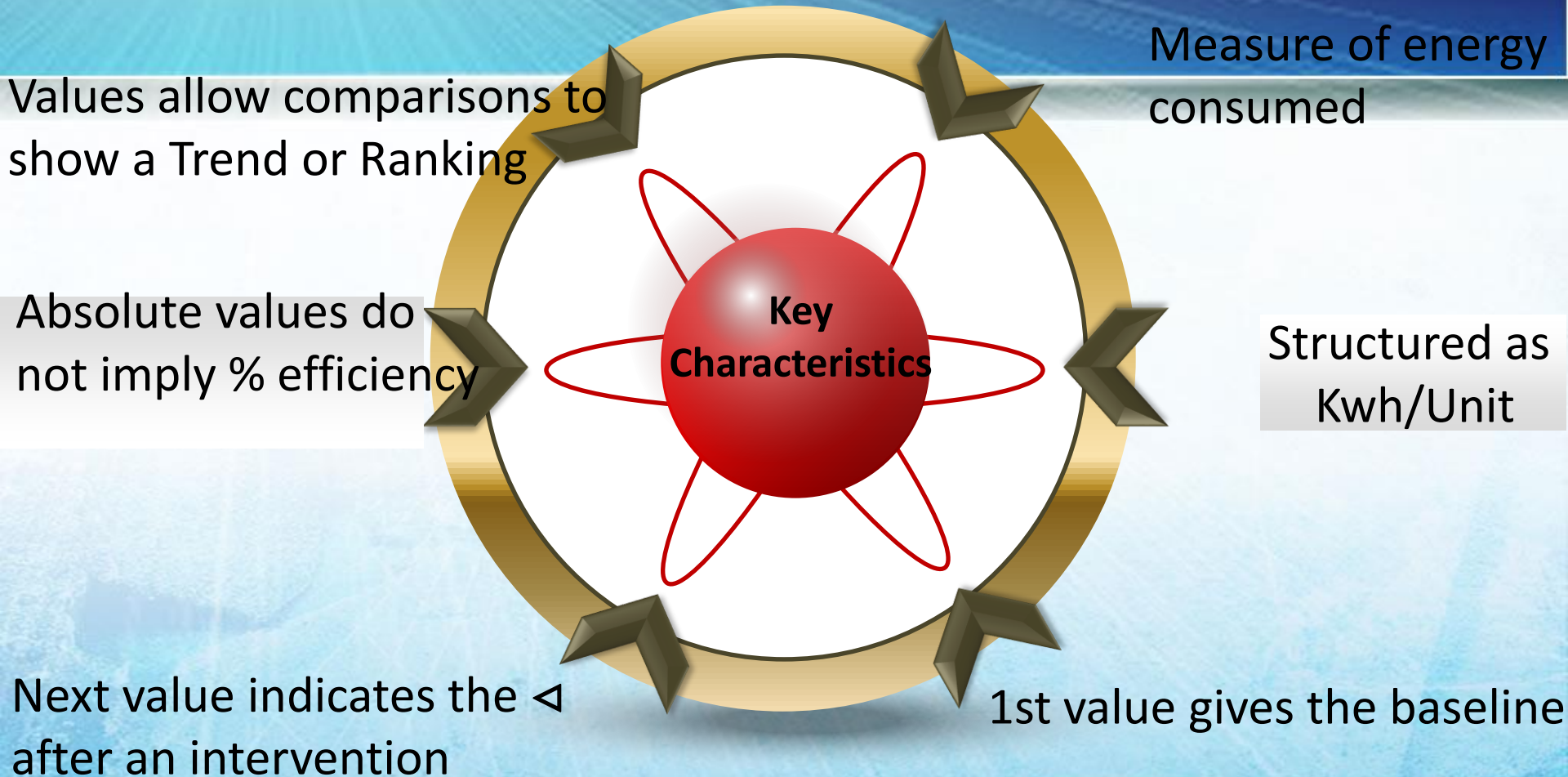
Climate Change
Adaptation

**R
E
S
P
O
N
S
E**

Key Considerations



Energy Performance Indicators



Energy Performance Indicators

Sample #1
Sample #2

- KWH/Sq. Ft.
- KWH/Qty (Equipment)

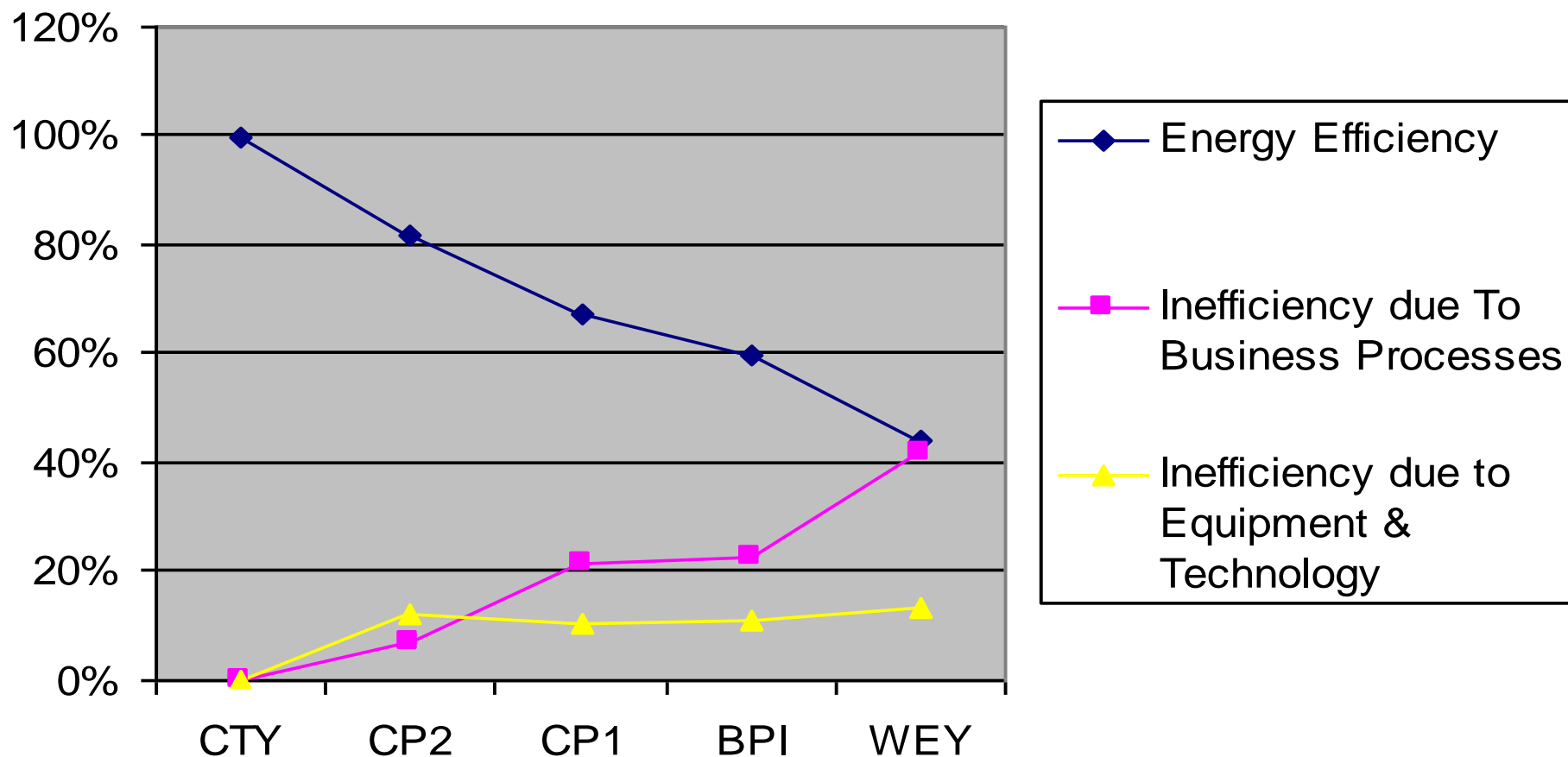
Sample #3
Sample #4

- KWH/Rooms
- KWH/Occupants

Sample #5
Sample #6

- KWH/Production Units
- KWH/Investment \$

Energy Performance Indicators



Energy Performance Indicators



The diagram features a central grey circle with the text 'Building Efficiency'. Surrounding this central circle are three concentric white circles. Three colored spheres (yellow, red, and blue) are positioned around the central circle, each resting on a grey rectangular base. The yellow sphere is at the top left, the red sphere is at the top right, and the blue sphere is at the bottom. Each sphere has a corresponding colored text box next to it. The background consists of horizontal blue and white stripes.

Building Efficiency

A 10% inefficiency is inherent in our buildings because of the state of implemented technology

Management & Operations account for additional inefficiency and is the major driver behind gross inefficiency

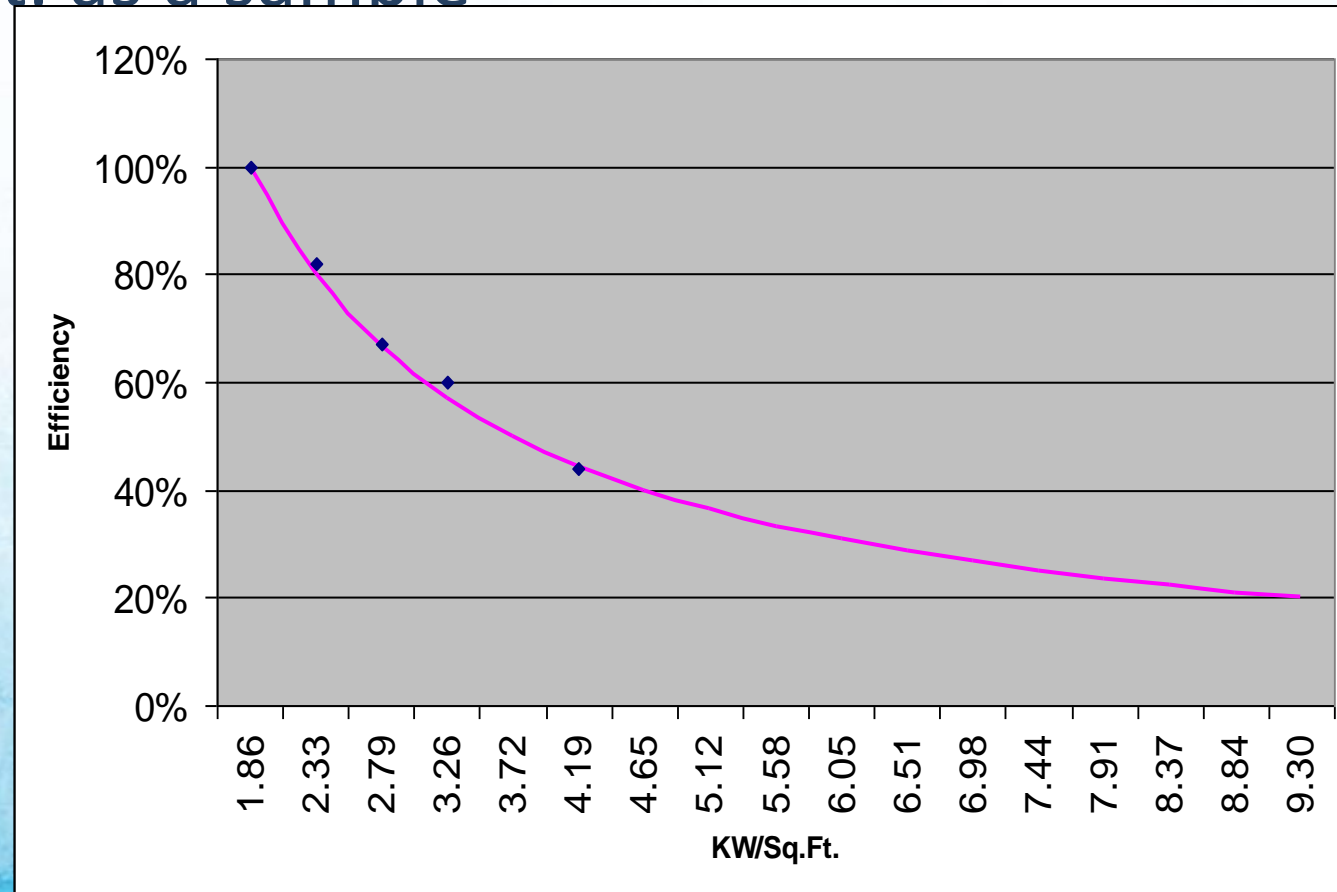
Inefficiency from equipment and technology stabilizes between 10% and 14% even when there is gross inefficiency

Energy Performance Indicators

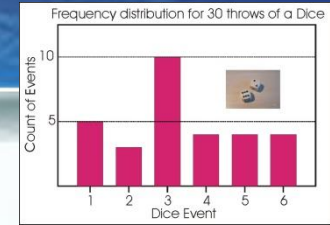
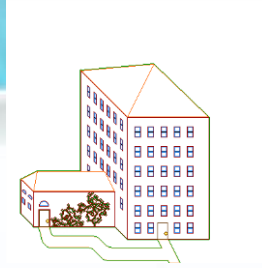
- KWH/Sq. Ft. as a sample

$$U = \frac{I_{Best}}{I_E} * 100\%$$

$$U' = 100\% - U$$



Monitoring & Evaluation



Utility Electricity Data

- KWH
- All commercial
- Specific Sector(s)
- Specific Building
- Monthly/Annually

Building Size Data

- Square Footage
- All Commercial
- Specific Sector(s)
- Specific Building
- Additions/Reductions

Building Configuration Data

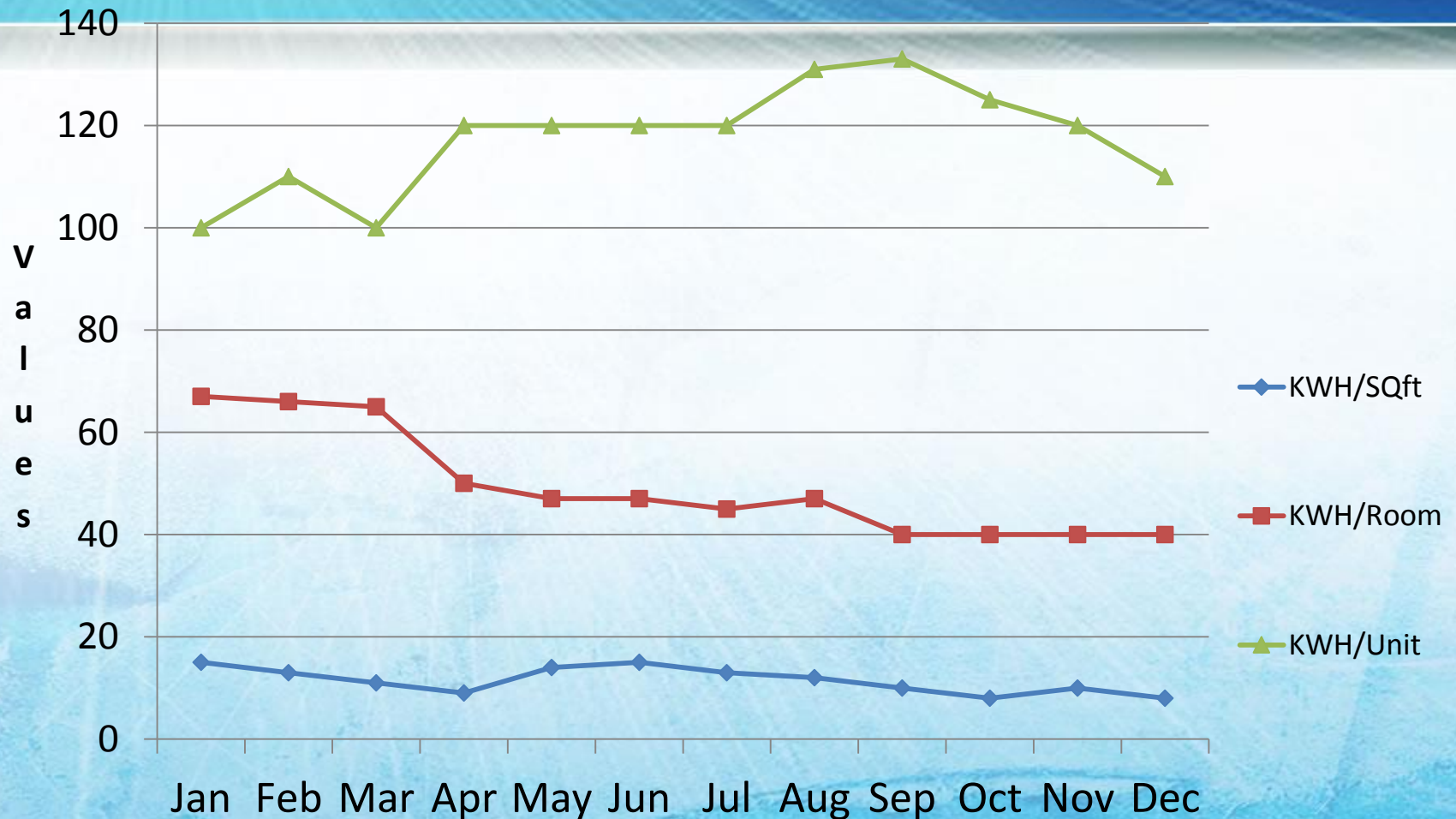
- Number of Rooms
- Number of Occupants
- Monthly/Annually

Production Data

- Number of units
- Monthly/Annually

Monitoring & Evaluation

EPIs



Thank You

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